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ABSTRACT

This study was conducted to assess the effectiveness of Cleveland's Developmental Vocational Education Programs (DVEP) in meeting the project objectives: (1) The program would result in greater knowledge of occupations within an array of occupational clusters, and (2) The program would result in more positive attitudes toward specific jobs and the world of work. Interviews conducted with DVEP staff, teachers, and principals of some target schools, on-site observations, and questionnaires were used to obtain the data. Findings indicate that: (1) The project yields more occupational knowledge and affects attitudes positively, although the impact of the DVEP presentations is not uniform for all participating schools, (2) No significant differences were obtained in the attitudes of students in the program toward global world of work concepts when compared to the attitudes of control students, (3) A great degree of vagueness exists as to the role of classroom aides, (4) Aides lack the proper educational training, and (5) In general, the delivery of DVEP material was effective in the opinion of both the aides and the teachers. Sample copies of the instruments utilized are appended. (SN)

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AN EVALUATION OF THE DEVELOPMENTAL VOCATIONAL EDUCATION PROGRAM

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EDUCATION & WELFARE
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INTRODUCTION

The Division of Research and Development, Cleveland Public Schools, contracted with the Human Services Design Laboratory (HSDL) to evaluate the impact and effectiveness of the Developmental Vocational Education Program (DVEP). As the independent evaluation for the DVEP project, the following tasks were designated:

(1) conduct interviews and on-site observations of program activities.

(2) develop and/or select appropriate instrumentation to assess program objectives.

(3) collect evaluation data through information questionnaires, attitude questionnaires, interviews, etc.

(4) analyze data collected.

(5) and prepare the evaluation.

While the primary goal of this evaluation was the assessment of specific DVEP project objectives, there was substantial involvement in the organizational processes required for program delivery. Based on these process observations, and research findings, the HSDL will provide technical assistance and consultation to the program administrator and operating personnel.

DVEP Objectives

In cooperation with the Model Cities, the overall goal of the DVEP project is to create a bridge between school and earning a living. This will be done through a career development program beginning in elementary school and continuing through high school. It will provide students with a broad base of vocational information and exploratory experiences on which to base career decisions, with skill training to

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enable them to secure employment or undertake future training in the field of their choice and with actual job placement. Thus, the program is designed to increase options for making occupational decisions; to eliminate real and imagined barriers to attaining job skills; and to enhance learning achievement in all subject areas and at all levels of education for the youth in high poverty Model Cities area schools.

The program is developmental in nature and pyramidal in design. It will begin with a broad informational/organizational approach at the elementary level, and will narrow to an exploratory/preparational approach at the senior high level. Such an approach is designed to put the student at each level in a position to make informed decisions as to the next step in his career development and successively narrow his vocational preference.

Beginning at the upper elementary school level, students in grade five and six will acquire reliable and valid information on the broad range of available occupations and their requirements. The emphasis will be on occupational clusters rather than on specific jobs, including future occupational areas which are expected to emerge as a result of new technology. The students will become oriented to the world of work through multi-faceted experiences including field trips, work simulation games and role playing and will obtain experience in basic job skill operations.

At the junior high school level, the explorational aspect of the program involves learning the functional interrelationships between the production, management and the service areas of business and industry. Students will sample the operations and skills required in a number of occupations through work site tours and experience.

Finally, at the senior high level the program orientation is toward the preparation for actual job placement beyond school. Students will move from exploratory experiences in a number of occupational areas to intensive training in one skill

area of their choice. High school students will get on the job experience in a work study program.

Several specific outcome objectives relative to the program design have been identified. These are:

(1) increased ability to identify and describe a variety of occupations in a broad array of occupational areas (elementary school level).

(2) increased knowledge of the operation of basic tools and equipment in various occupations and their utility (elementary school level).

(3) increased knowledge of the operations of and functional interrelationships between management, production and service areas of business and industry (junior high school level).

(4) increased knowledge of the operations involved in a wide variety of occupations (junior high level).

(5) increased ability to describe the relationship between specific vocational activities and "real" occupations (junior high school level).

(6) increased positive attitudes toward vocational education (senior high school level).

Two additional objectives specific to the senior high school level were in the original proposal for the program but were subsequently renegotiated and eliminated.

DVEP Personnel

The following personnel are presently involved in the service delivery of the DVEP project. The Project Manager directs and supervises the entire project. Four Co-ordinating Teachers are responsible for developing workable outlines and lesson plans for the occupational clusters which are presented through the Social Studies and Language Arts curricula. This involves obtaining detailed information on the job families for classroom activities, developing appropriate sound slides, purchasing occupational films, arranging for classroom speakers, organizing and supervising

field trips, and providing other materials as needed by the Vocational Aides and classroom teachers. The Co-ordinating Teachers also serve as supervisors for the Vocational Aides. This responsibility includes duties relating to both achieving specific DVEP objectives and acting as a resource for Aides' career development. Finally, the Co-ordinating Teachers are responsible for interpreting the project proposal and relating it to the Aides, school principals and classroom teachers.

It is through the Vocational Aides that the actual contact between the program and the students is made. In conjunction with the classroom teachers, they present the study units on the world of work, direct appropriate classroom activities such as simulation games, show films and sound slides and stimulate classroom discussion. To prepare for their classroom presentations, the Aides team with their respective Coordinating Teachers (three or four Aides per Teacher) in developing the occupational cluster study units and classroom activities and assist in securing outside speakers. Both the Aides and Co-ordinating Teachers also develop and administer pre- and post-tests to evaluate the students after the completion of each occupational cluster.

The use of Vocational Aides represents a unique and critical aspect of the DVEP project. A system objective for the project is to provide an opportunity for career upgrading for these individuals. Specifically, the DVEP project will provide a system for training individuals from the Model Cities area to become teachers. The Aides will obtain practical classroom experience from working with the DVEP classes while enrolled at Cuyahoga Community College for night and summer courses leading to a degree in education. Thus, their training will result in educators equipped to work with Inner City children and who will choose to continue their careers in disadvantaged area schools.

Project Implementation

The DVEP project has been implemented at the upper elementary school level, grades 5 and 6, during the academic year of September, 1971, to June, 1972. The

Aides were assigned to the ten elementary schools to be served by the DVEP and in early October, 1971, began class presentations. Further project implementation at the junior high school and senior high school levels was not initiated due to the dissolution of the Model Cities board. Planning and development efforts, however, were continued.

Organizational Overview

The initial activities of the Lab team were directed at attaining a general overview of the DVEP project and to intoduce the Lab in its role as the independent evaluator. During late Febuary and March of 1967, the Lab team conducted a series of interviews with the DVEP staff and the teachers and principals of some target schools. The following sections present both a description of the current project activities and some key findings relating to more effective implementation. The final section (Empirical Evaluation Objectives) indicates the scope as defined by the current program status.

DVEP Staff Activities

The meeting with one of the DVEP Coordinating teachers and the Vocational Aides assigned to her, proved to be informative to both the members of the Lab team and the members of the DVEP team. The Lab team was able to obtain a clear picture of the activities this required for the DVEP program implementation in the fifth and six grade levels and an insight into the processes used in service delivery. For the DVEP staff, the meeting did much to clarify the nature and objectives of the evaluation and hopefully allayed some of their concern about being "evaluated".

The perceptions and descriptions of both the Coordinating Teacher and the Vocational Aides of their job duties and responsibilities were highly consistent with the job summaries presented in the original project proposal. While there was

variability in the number of classes for which the Vocational Aides were responsible at their respective schools, each Aide spent a minimum of one school day a week with each class. Beside the actual presentation of the career development information, the Aides would participate in a variety of other activities during the school day. The Aides would assist the teacher in supervision of the class during other school activities; they would provide tutorial assistance for students in either English and/or Math; and they would spend time in the development of future career development presentations. The Aides would also meet with the Coordinating Teacher every Monday to share classroom experiences, knowledge, and to develop future presentations for new job clusters. They would discuss alternative methods of presenting the material including role playing exercises, lecture and visits to appropriate facilities, e.g. Hopkins Airport.

The Aides indicated that much of their initial classroom time was spent in observing the teachers' behavior in order to further develop their own teaching skills. As the school semester progressed, their experience and the assistance of their teachers resulted in an increase in their teaching competencies. These included skills such as generating class discussion about the topics presented, maintaining order during the presentations, and, in general, utilizing the class time more effectively.

This initial contact to identify the current DVEP staff activities also yielded information about key problem areas. The basic problem identified by the Aides was their dependency on both their particular teacher and the social studies curriculum. They felt that their effectiveness and maximum utilization could be, and was, in fact, enhanced by greater teacher interest. In those classes in which the teacher expressed interest and support of the concept of career development, the Aides were

able to benefit greatly from the teacher's constuctive criticism and active participation in the class presentations. Insofar as the career development program was tied to the Social Studies curriculum, the Aides indicated that this created a need to relate and justify any single presentation to the current Social Studies unit. Since the program was limited to one class session (40 minutes) a week, and the time to complete a given occupational cluster would progress at a slower rate than the Social Studies unit, this relationship became strained at times.

On-Site Observations and Teacher Perceptions

Following the discussion with the Coordinating Teacher and the Vocational Aides, the initial overview of the existing processes and relationships needed to implement the DVEP program was completed with on-site observations of the Aides and interviews with the school teachers and principals.

In general, most of the teachers and principals indicated a favorable reaction to the concept of developmental vocational education for elementary school level children and were also favorably impressed with the delivery of the program. There were, however, several questions and criticisms voiced by the teachers and principals.

Both the teachers and principals indicated that they were initially unclear about the role of the Vocational Aide in the classroom beyond the Aides' actual presentation of career development information. The subsequent development of role definitions varied with the particular Teacher-Vocational-Aide relationship. In some cases, the Vocational Aide evolved into a teacher-assistant. That is, during the day the Aide would assist the teacher in other presentations and in running the classroom. This particular role definition most closely approximates the goal of the DVEP project to develop the Aides' career upgrading. Here the Aides become more familiar and more confident with the role of teacher. This, however, was not the case for all of the teachers. In many cases the Aides were under-utilized

and left to themselves to occupy their time during the school day. In general, however, the teachers felt that the Aides gave them some much needed assistance in running the classroom.

The most prevalent criticism on the DVEP project, in terms of service delivery, was the lack of skill development for the Aides in their role as class instructors. This was particularly true at the beginning of the program. At that time, the Aides were almost completely inexperienced in preparing a lesson for presentation. It was readily apparent to the teachers that more in-service training would have benefited the Aides. In fact, several of the Aides indicated that their initial enthusiasm for classroom instruction waned for a period of time at the beginning of the year. They became discouraged by their inexperience and had doubts about their effectiveness. This pattern was reversed as the school semester progressed, yet it most certainly detracted from effective program delivery.

The second major criticism by the teachers of the DVEP program involved the relationship between the career development material and the Social Studies units to which this material was to be related. It became readily apparent that the two sets of materials increasingly diverged from one another and would follow independent courses. The justification for relating the two sets of material to one another seemed somewhat artificial to the teachers. This observation reinforced the difficulties expressed by the Aides concerning the direct injection of the DVEP program into the Social Studies curriculum.

DVEP Staff Feedback

One final meeting was held with all the Coordinating Teachers and Vocational Aides to feedback Lab team's overview of the program and to obtain their reactions.

The key processes and relationships required for effective program implementation were discussed as well as the identification of appropriate empirical research objectives.

While there were differences in the degree and type of in-service training provided to the Aides, most indicated they would benefit from more substantive training rather than merely observing teachers for a short period of time.

The entire group noted differences in their utilization by the teachers. Most had developed enriched relationships with the teachers, in which the role of the Vocational Aide had evolved into something more. Some had not. These individuals were limited to their DVEP responsibilities or, even worse, misutilized by teachers so that they were performing clerical or "clean-up" duties.

Also mentioned as a difficulty in program delivery by Aides (as well as teachers) were administrative scheduling problems. These administrative problems existed within the DVEP project, the individual schools and between both. A frequent problem for example involved scheduling and coordinating field trips.

Regarding the status of program implementation, the Aides indicated that between three and five occupational clusters were either partially or completely presented in the classrooms. The two completed clusters common to all the Aides were Transportation and Communication. Program evaluation therefore focused on the content of these clusters. A variety of non-lecture learning experiences were provided by the Aides including role-playing and field trips. Although currently being developed, "hands-on" experiences in basic job skill operations had not been systematically implemented (individual Aides had used occasional "hands-on" materials).

The overall consensus of the Aides was that the DVEP project had, even within the relatively short implementation period, significantly impacted on the target population.

Empirical Evaluation Objectives

The limited implementation of the DVEP project restricted the evaluation of the program's outcome objectives to those appropriate for the upper elementary school level. However, the "hands-on" experiences necessary for increased knowledge of the operation of basic tools and equipment (Objective 2) were not uniformly provided for the students. Therefore, this objective was not considered for evaluation. After discussion with the DVEP staff and the on-site observations, it was felt that the attitudes of the target population toward specific jobs and the world of work also should be assessed. Therefore, the DVEP project objectives to be evaluated were:

Objective 1: Experimental (DVEP) and control students will be compared on the number of correct identifications and descriptions of specific job classifications.

Objective 2: Experimental (DVEP) and control students will be compared on instruments measuring their attitudes toward specific jobs and the world of work.

Instrument Development

Pilot Instrument

In order to ensure the content validity of the pilot instrument an outline of its content was developed. Since content validity depends on a rational appeal to an adequate coverage of important content, this outline provided a basis for review by the Lab team and the DVEP staff. In addition to the content, the outline suggested the types of items to be employed, the approximate number of items, method of administration and scoring.

Several sources were utilized to develop the content for the pilot instrument

outline. The primary content source was the Quarterly Report (June 30, 1971) submitted by the DVEP Project Director. From this report, job classifications and descriptions specific to the common occupational clusters covered by the Aides were obtained. Further content information for these common clusters, specifically the Transportation and Communications clusters, was obtained from the pre-tests given by the Vocational Aides prior to the class presentations of the material. The choice of item format was not only based on the content of the specific questions but also on the on-site visits by the Lab team. It was felt that the level of presentation in class should dictate, in large measure, the level of presentation of the items.

This preliminary content outline, in fact, resulted in two pilot instruments to evaluate the DVEP program. The first, the Job Information Questionnaire, primarily related to the first objective in the original program proposal. This was to identify differences in the ability to identify and describe job classifications. An additional section of this questionnaire included "general," or common knowledge, questions which also related to the program presentations. That is, the information required for this section was available to students from sources other than the DVEP program presentations, e.g. the name of Cleveland's largest airport.

The second instrument evolving from the preliminary content outline was the Job Attitude Questionnaire. This questionnaire consisted of two sections, the first involved the alternation ranking of eighteen jobs for job preference. The second was a semantic differential format for nine concepts related to vocational education. While a change in attitude was identified as a specific objective for the high school DVEP program, it was felt that the attitudes and perceptions of the fifth and sixth graders with respect to the world of work would be highly meaningful data.

The use of an alternation ranking technique in this instrument represented

somewhat of a risk since it was not known whether the fifth and sixth graders would be able to follow the unusual instructions. Nonetheless, it was decided that the obtained rankings by the elementary school children could provide significant insights into the value which they placed on specific jobs.

The instructions for the alternation ranking require the individual to examine the entire list of jobs and then think about how much he or she would like to work on each of the jobs. The individual is asked to identify the "Best" (most preferred) and then the "Worst" (least preferred) jobs on the list. This alternating choice procedure, "Next Best" and "Next Worst," is repeated until the list is exhausted. Such a procedure allows the individual to make choices of extreme preferences first. It is easier to distinguish between "Second Best" and "Second Worst" than it is to distinguish between "Second Best" and "Third Best." While more administratively complex, the subjects should experience less difficulty in making their preferences.

The eighteen jobs for this section were, for the most part, chosen from a list of ninety jobs used in study of occupational prestige in the United States (Hodge, Siegel and Rossi, 1966). The list was modified to eliminate any sex bias in the job titles. Nonetheless, these eighteen jobs reflect the complete range of high and low prestige jobs.

The semantic differential component of the Job Attitude Questionnaire reflects a more conventional approach to assessing the feelings of elementary school aged children toward various concepts relating to the world of work. Those concepts included in the questionnaire were: GETTING A JOB, PLAY, CAREER EDUCATION, UNEMPLOYMENT, MAIL CARRIER, NEWSPAPER REPORTER, TELEPHONE OPERATOR and TELEPHONE INSTALLER. The latter four concepts are specific job titles with which both the

experimental and control groups should be familiar. Each concept was then rated on nine scales anchored by bipolar adjectives. In fact, the nine adjective pairs used in the pilot instrument were taken from a semantic differential employed by the Cleveland Public Schools, Division of Research and Development.

A short explanation of the rationale for the semantic differential approach would clarify its relationship to the evaluation objectives. The semantic differential was developed as a measure of the "meaning" of various concepts. Here "meaning" includes all possible reactions people have to words and things. If it is reasonable to assume that much of "meaning" can be and usually is, communicated with adjectives, it is also reasonable to assume that adjectives can be used to measure various facets of meaning. Three overlapping facets of meaning usefully apply to the semantic differential: denotation, connotation and association. In particular, the semantic differential primarily measures what implications a given concept has for a particular person, or the connotative aspects of its meaning. This measurement is accomplished by the identification of common factors among the bipolar adjective scales.

Previous research (Osgood, 1962) involving factor analytic designs has shown that three major factors are invariably defined by the different semantic differential scales. These are evaluation, potency and activity. These factors are constructs which explain an underlying commonality among several measures. However, the factors do not always have the same content (the defining adjective scales) since the meaning of the semantic differential scales often depend on the concept being rated. Therefore, the factor structure of a particular set of scales for a particular concept should be identified, rather than depending on previously defined factors for those scales.

Once the specific factors had defined, the scores on the component scales (in this case, obtained on a 5 pt. rating scale) are summed. These summed scores represent the measure of the individuals attitudes toward the concept. From these group comparisons can also be made.

Method

Both instruments, the Job Information Questionnaire, and the Job Attitude Questionnaire were field tested at Daniel E. Morgan Elementary School. Two sixth grade (n= 58) and one fifth grade (n=54) classes were used for the field testing sample. There were thirty-nine (n=39) males in the sample and fifty-three (n=53) females in the sample. The questionnaires were administered over a two day period in order to determine the maximum possible amount of time needed for the completion of the questionnaires.

Instructions

Oral instructions were given for each questionnaire. The following points were included in the oral instructions for the Job Information Questionnaire:

(1) This questionnaire will be used to compare fifth and sixth graders in the city of Cleveland with regard to their knowledge about certain jobs.

(2) This is not a test, but should be taken like a test. Therefore, please do not look at your neighbor's paper and try to do the work by yourself. If you do not know the answer, please guess. Try not to leave any answers blank. Do not worry about spelling when you answer fill-in questions.

(3) If you do not understand something as I am reading the questions, please raise your hand and I will try to answer your question.

(4) When I read a question and you know the answer, do not yell the answer out loud. Write or underline the right answer.

(5) Your answers will be confidential and will not be used for your grades in this class. We are not interested in your individual score. Remember we want to compare fifth and sixth graders throughout the City of Cleveland.

The questionnaire was then distributed. The test administrator, a member of the Lab team, then read each item in the questionnaire to the class. The next item was read when all the students indicated they had completed the previous item

The oral instructions for the Job Attitude Questionnaire were quite similar. However, they were modified to indicate that this was a measure of the students feelings toward certain jobs rather than their knowledge about certain jobs. For the alternation ranking procedure, the students also were told that all the jobs could be performed by either men or women i.e. were no "male jobs" or "female jobs".

Again, in administering the questionnaire, all efforts were made to insure that each student completed the entire questionnaire. For both the alternation ranking and semantic differential sections, the test administrator demonstrated the proper procedure for completing the items with step-by-step instructions.

Data Analysis for Job Information Questionnaire

The Job Information Questionnaire data was analyzed with the objective of obtaining a reliable measure of both general and specific knowledge relating to particular occupational clusters. Since the content and purpose of this pilot instrument defined it as an achievement test, two types of item analyses were performed: item difficulty and item-total correlation.

The first type of item statistic examined was the difficulty level of each item. The basic index of difficulty level the percentage of individuals passing an item

(answering in the correct direction). In test construction, item difficulty ("p" values) is important for several interrelated reasons. First, the "p" values influence the shape and dispersion (spread) of the test scores. If the average "p" value is far removed from 50% correct responses in either direction, the distribution of test scores will tend to be biased with either very high or very low scores and the variability among these scores will tend to be very small (Nunnally, 1967). Since it is desirable to have an approximately symmetrical distribution of scores, an average "p" value of about 50% for the test items should be obtained.

The second reason for using the "p" values in the data analysis is that they relate directly to internal-consistency reliability. Internal-consistency reliability is most appropriately applied to homogeneous tests, i.e. tests composed of items which all measure the same quality to about the same degree. This type of reliability indicates how closely an obtained score comes to the score the person would have attained if the measuring instrument was perfect. Internal-consistency reliability is greatest when:

(1) The item intercorrelations are greatest.

(2) The dispersion of item scores (variance) is greatest. This occurs when the average item difficulty is approximately 50% (as discussed above).

(3) The items are of equal difficulty (Guilford, 1965).

In an effort to achieve the desirable statistical conditions of normal score distribution and high test reliability, an effort was made to select pilot instrument items whose item difficulty was between 40% and 60%.

However, the use of the item difficulty approach as the only means for selecting test items is insufficient. More important than the matter of item difficulty is the issue of whether a test item discriminates individuals in the same manner as

the other test items. When items correlate positively (discriminate individuals in a similar direction; "passing" one item means "passing" other items) with one another, those items with the highest average correlations are the best items. Since such item intercorrelations are highly related to the correlations of item score with total test score, those items with the highest item-total correlations (the degree to which those individuals who "pass" the item get higher test scores) similarly can be considered the best items. More specifically, when compared to items with relatively lower correlations with total score, those items with high item-total correlations account for a greater percentage of score differences in terms of a common content factor. Thus, choosing items with the higher item-total correlations has the effect of increasing the homogeneity (internal consistency) of the test. The legitimate substitution of high item-total correlations for item intercorrelations has the additional benefit of insuring that the psychological variable measured (knowledge of occupational clusters) is uniform for all items.

In summary, item difficulty and item-total correlation data were examined for each item in the pilot instrument. Those items with the highest item-total correlations and with item difficulties between 40% and .60% were retained. Additional items with acceptable item-total correlations but with "p" values somewhat below .40% e.g. .30%, were also retained. The rationale for including these additional items was that the field test subjects, like the control subjects, in the actual comparison study, should be less likely to pass the test items. They have not been exposed to the DVEP material and the items should be expected to be more difficult for them.

The score distributions for some of the "fill-in" items indicated an artifically high weighting of these items in the total scores. A revised scoring key for these items was also developed.

The revised achievement measure (see Appendix, pages 1-3 of Job Information Questionnaire) consisted of thirty-eight (38) items with a maximum score value of 50. Table 1 shows the obtained item difficulties and item-total correlations for each item after the revised instrument was administered to the experimental students (those in the DVEP project) and a control students (comparable students not in the project). With respect to the three conditions which maximize internal-consistency reliability, the following observations can be made:

(1) The obtained item-total correlations, in place of item intercorrelations, are all positive and with two exceptions (item 9j and 9q), are above .20 for the total group. In fact, twenty-six (26) of the thirty-eight (38) correlation coefficients (index of the relationship between passing an item and obtaining a high score) are above .30. Given the total number of items, these relationships between item scores and total test scores can be considered statistically significant.

(2) The average item difficulties for the experimental, control and total groups were 56.9%, 44.2% and 52.4%, respectively. These values, particularly the average item difficulty for the total group, closely approximate the requirement of 50% average item difficulty.

(3) The condition of equal item difficulty for all items was only partially fulfilled. Seventeen (17) of the thirty seven (37) items had "p" values between 40% and 60% for the total group. Here, the primary concern is to minimize excessively difficult items. Some easy items are desirable from the point of view of reducing test anxiety, however too many such items reduce the score distribution. There were only five (5) whose difficulty level was above 80%.

Beyond these observations, the key index to assess the effectiveness of the

Table 1

Comparison of Item Difficulties (p) and Item-Total Correlations (r) for Questionnaire Items

Questionnaire Items	Experimental Group (N=490*)		Control Group (N=314)		Total Group (N=804*)	
	Item p	Cor. Coef. (r)	Item p	Cor. Coef. (r)	Item p	Cor. Coef. (r)
1 (Fa. Occ.)	39%	.26	32%	.30	37%	.29
2 (Mo. Occ.)	68%	.21	52%	.34	62%	.32
3 (# Newspapers)	56%	.31	37%	.40	48%	.37
4 (# T.V. Stat.)	87%	.28	84%	.19	86%	.24
5 (Airport)	60%	.49	39%	.46	52%	.51
6 (# Airlines)	42%	.60	9%	.50	29%	.62
7 (Soc. Sec. Card)	62%	.45	21%	.16	46%	.44
8a	37%	.22	21%	.15	31%	.24
8b	64%	.40	43%	.16	56%	.36
8c (Job Order)	56%	.47	36%	.19	48%	.41
8d	55%	.42	36%	.10	48%	.35
8e	35%	.22	17%	.09	28%	.23
9a (S. D. Mess.)	80%	.46	81%	.35	81%	.39
9b (Copy Ed.)	82%	.46	78%	.32	81%	.40
9c (Installer)	64%	.47	48%	.33	58%	.44
9d (Lineman)	58%	.36	51%	.17	56%	.30
9e (Traf. Mang.)	44%	.23	34%	.17	40%	.23
9f (News. Dir.)	46%	.35	33%	.19	41%	.32
9g (Serv. Rep.)	33%	.27	24%	.13	29%	.24

* For Items 1 and 2, N=438 in Experimental Group and N=752 in Total Group.

Table 1 (continued)

Comparison of Item Difficulties (p) and Item-Total Correlations (r) for Questionnaire Items

	Experimental Group (N=480*)		Control Group (N=314)		Total Group (N=800*)	
Questionnaire Items	Item p	Cor. Coef. (r)	Item p	Cor. Coef. (r)	Item p	Cor. Coef. (r)
9h (Par. Post Carr.)	77%	.43	74%	.41	76%	.40
9i (Engraver)	51%	.37	43%	.38	48%	.37
9j (Pressman)	82%	.48	84%	.29	83%	.39
9k (Make-up Artist)	54%	.31	55%	.27	55%	.27
9l (Chief Eng.)	44%	.32	29%	.09	38%	.28
9m (Broad. Tech.)	77%	.49	73%	.37	76%	.44
9n (Sales Rep)	28%	.28	19%	.02	25%	.22
9o (Dir. Clerk)	37%	.41	28%	.15	34%	.33
9p (Dist. Clerk)	29%	.07	35%	.13	31%	.06
9q (For. Corr.)	25%	.05	28%	.20	26%	.08
9r (Wind. Cler.)	61%	.37	50%	.28	57%	.35
10	70%	.34	46%	.11	60%	.31
11 (Airline Jobs)	89%	.39	91%	.31	90%	.33
12	79%	.23	72%	.17	76%	.22
13	67%	.42	55%	.30	62%	.39
14 (Hos. Jobs)	-	.50	-	.36	-	.46
15a	53%	.36	31%	.23	45%	.36
15b ("Odd" Job)	55%	.37	41%	.29	50%	.37
15c	56%	.42	43%	.25	51%	.38

item analyses is the actual internal-consistency reliability for the revised instrument. By obtaining split-half scores for each individual (half the items were randomly selected, their item scores summed and then, compared to the summed item scores for the other items) estimates of reliability can be obtained. These split half correlations were .75, .62 and 73 for the experimental, control and total groups respectively. However, the split-half approach only represents an estimate of the reliability for half of the test. While the full-length test is not twice as reliable as the half test, its reliability is greater and can be obtained using the Spearman-Brown correction. The reliabilities of the total test as estimated from the above split half reliabilities were .86, .77, and .84, respectively

Further, even these estimates of internal-consistency reliability are conservative and tend to be underestimates. The Spearman-Brown correction of the split-half approach is based on one arbitrary division of the test. A test can be split into halves in a great many ways and each split might yield a somewhat different estimate of reliability since the comparability of the various halves will be slightly different. Higher reliability estimates are usually obtained when all the possible ways of subdividing the test are taken in account, e.g., Kuder-Richardson estimates of reliability. Therefore, the test reliability of the revised Job Information Questionnaire can be assumed to be in the .90's for the experimental and total groups and in the .80's for the control group. Such values indicate the obtained test scores will closely approximate the possible test scores that would have been achieved by the students if the revised instrument was a perfect-measure of occupational knowledge. Even as underestimates the corrected split half reliabilities are equal to or above the acceptable level of reliability in test construction (Kunnally, 1967).

Data Analysis for Job Attitude Questionnaire (I)

The first section of the Job Attitude Questionnaire consisted of the alternation ranking of eighteen jobs to obtain the relative prestige or value of these jobs. As previously discussed, this procedure represents a departure from conventional attitudinal measures. The data from the pilot instrument, as well as the actual administration, were examined to determine the feasibility of including the alternation ranking in the revised instrument. No specific objectives were identified in assessing the data; the analysis simply was exploratory.

The field testing of this section involved close test administration by the DVEP team. Step-by-step instructions were provided for the first six rankings; by then, almost all the field testing subjects understood the ranking procedure and the nature of the information desired, i.e; which jobs were more preferred. The percentage of missing data for this section was comparable to the Job Information Questionnaire and the semantic differential section. Thus, the alternation ranking procedure was considered to be administratively acceptable.

In order to analyze the field testing data, the median rank for each of the eighteen jobs was determined. Consecutive values from 1 to 18 were assigned to the rankings of "Best Job" to "Worst Job." Then, a frequency distribution of these values for each job was obtained. The median rank was then defined as the value above which were exactly half the field testing rankings and below which were the other half. For example, the median rank for the job of Doctor was 6.33. This indicates that half the students rank this job either 1,2,3,4,5, or 6 while the other half ranked the job between 6 and 18.

Table 2 presents the median rank data for the total sample and for males and females. The numbers in the parentheses are the ranks of the median rank data, e.g. for Teacher the median rank for the total group was 4.60 and this was the highest value obtained for all the jobs. As is clearly evident, certain jobs were preferred

Table 2

Median Rank Data for Males, Females and Total Field Testing Sample

Job	Male		Female		Total	
Doctor	4.30	(4)	9.10	(10)	6.33	(4)
Actor/Actress	5.90	(7)	4.20	(3.5)	4.80	(2)
Nurse	13.20	(16)	4.20	(3.5)	7.00	(6)
Car Mechanic	2.90	(1)	14.10	(17)	10.50	(12.5)
Teacher	7.85	(10)	3.30	(2)	4.60	(1)
Policeman	3.90	(2.5)	12.50	(14.5)	11.60	(16)
Executive Secretary	10.40	(11)	4.90	(5)	6.50	(5)
Waiter/Waitress	11.20	(12)	8.33	(9)	9.90	(10)
Model	11.65	(15)	1.66	(1)	6.00	(3)
Lawyer	3.90	(2.5)	11.00	(12)	8.66	(9)
Reporter	7.00	(8)	12.20	(13)	10.80	(14.5)
Beautician	12.40	(14.5)	5.10	(6)	7.90	(7)
Garbage Collector	17.10	(18)	17.85	(18)	17.66	(18)
Cook	13.85	(17)	6.70	(7)	8.40	(8)
Disk Jockey	7.50	(9)	10.60	(11)	10.20	(11)
Stewardess	12.50	(14.5)	7.60	(8)	10.90	(14.5)
Electrician	5.40	(5.5)	12.50	(14.5)	10.50	(12.5)
Airplane Pilot	5.50	(5.5)	13.90	(16)	12.60	(17)

by males and others by females. This obtained sex bias in the preferences of certain jobs was in direct contradiction to the instructions which specified that all the jobs were equally available to males or females.

On the basis of this data, it was decided to include the alternation ranking section in the revised instrument (See Appendix, page 3 of Job Information Questionnaire). Differences in the median ranks for Experimental (DVEP) Boys as compared to Control Boys and Experimental Girls as compared to Control Girls would be examined. The underlying hypothesis would be that the DVEP project would effect the perceived preferability of certain jobs.

Data Analysis for Job Attitude Questionnaire (II)

The second section of the Job Attitude Questionnaire consisted of a semantic differential format (a group of nine bipolar adjective rating scales) for nine concepts relating to the world of work. Again, this approach represents a standard method of obtaining measures of attitudes and sentiments. The primary objective of this data analysis was to identify a common factor (s) among the nine scales within each of the world of work concepts. With the identification of the common factor (s), it is then possible to meaningfully sum the appropriate scale scores to measure the meaning each concept evokes for an individual.

In order to identify the common factor (s) within each concept, a factor analysis was performed. For each adjective scale, a numerical score was assigned to the subject's rating. Since 5-point scales were employed; a value of 5 was assigned to the positive pole of each scale and a value of 1 to the negative pole. For example, on the Good-Bad scale a rating next to Good received a score value of 5 and a rating next to Bad received a score value of 1. The meanings of each step on the scale were carefully defined and illustrated for the field testing sample.

Each scale score was then correlated with each of the other eight scale scores for all the concepts. Positive correlations would indicate high ratings on one scale, e.g. scores of 4 and 5, were associated with high ratings on the other scales.

Based on the correlations among the semantic differential scales, a "principle components method" factor analysis was performed for each concept. This factor analytic method is simply a mathematical procedure which takes the correlations among the scales and attepts to account for the various relationships in terms of fewer underlying hypothetical variables. These hypothetical variables are called factors. In other words, factors are redefinitions of the interrelationships among the scales in terms of fewer variables. The interpretation of a given factor depends on which scales relate to it most strongly, i.e. scales correlating with factors.

For all the nine concepts, the respective factor analyses resulted in one factor, Factor I, which clearly accounted for a majority of the correlations among the scales. In fact, with one exception, all the adjective scales related to Factor I more than any other factor obtained. Only the Soft-Hard scale consistently related more strongly with other underlying factors. Since eight of the semantic differential scales define the content of Factor I, it was considered to be an "evaluation" factor. In the revised instrument (see Appendix, pages 4-6), the semantic differential section employed these eight scales defining Factor I. The Soft-Hard scale was not included since it would yield only one scale score for the comparison between the experimental and control schools and this would be insufficient. The sum of the eight remaining scales did provide the measurement of attitudes with regard to each of the work concepts

In the data analysis for the semantic differential, an additional series of factor analyses were obtained to compare the work concepts on individual adjective scales. That is, the ratings on one scale were correlated across all nine concepts. This was done for each adjective scale, separately. The factor analyses of the scales yielded several factors that were consistently defined by the same concepts.

Factor I was defined by the concepts REPORTER, TELEPHONE OPERATOR, MAIL CARRIER and TELEPHONE INSTALLER. A second factor was consistently defined by the concept of PLAY. The remaining concepts, GETTING A JOB, CAREER, EDUCATION and UNEMPLOYMENT, served to define two other factors. However, the combination of these concepts was not uniform in all the factor analyses of the scales.

These data indicate that the concepts relating to specific jobs elicit attitudes, as measured by scale scores, different than the attitudes toward the other concepts. [illegible] concepts are highly related, the concept of TELEPHONE OPERATOR was not included in the revised instrument due to questionnaire design considerations, particularly test length. It was felt that there would be a minimal loss of attitudinal information.

Summary

The assessment of the EVEP project involved both achievement and attitudinal evaluation objectives. Instrument development was, therefore, directed toward obtaining meaningful and reliable measures in both these areas. The primary emphasis of the data analysis for the content questions was on internal-consistency reliability. Using two types of item analysis, item difficulty and item-total score correlation, a revised achievement measure was developed. The internal-consistency reliability for this measure was approximately .90, which is well above the required level of acceptability.

The data analyses for the attitudinal portions of the evaluation instrument examined the applicability of the measurement techniques. As a departure from typical attitude measures, the alternation ranking procedure yielded differential information about job preferences. A more conventional measure, the semantic differential was slightly revised based on factor analysis data. The use of a

single summed score for the semantic differential scales also resulted from the factor analyses.

A revised instrument, the Job Information Questionnaire, included the content, ranking and semantic differential measures.

EMPIRICAL EVALUATION

The impact of the DVEP project, with respect to the achievement and attitudinal objectives was assessed by comparing the Job Information Questionnaire data of students who had participated in the program (experimental group) with the questionnaire data of students who had not (control group).

Sample

To identify any potential differences within the experimental (DVEP) sample, one fifth and one sixth class from each of the ten elementary schools in the program were tested. The total number of students in the experimental group was 492. There were 259 fifth graders and 233 sixth graders. Examining the total experimental sample in terms of males and females, there were 237 males and 255 females.

The Division of Research and Development, Cleveland Public Schools identified three (3) elementary schools whose student populations were considered to be comparable to the student populations of the experimental (DVEP) schools in terms of socio-economic background and learning potential. Differences among the experimental and control schools in terms of teacher skills, classroom conditions etc. were also not considered to be significant. These schools, thus provided a "matched" group of fifth and sixth grade students for testing. The number of students in this control

group (n=314) represents all the fifth and sixth graders in these schools who were present in class on the testing days. There were 140 fifth graders and 174 sixth graders. The sample included 145 males and 169 females.

Test Administration

The Job Information Questionnaire was administered to both the experimental (DVEP) and control groups during the first week in June, 1972. Since it was not logistically feasible for one or two administrators to test all the students, the DVEP Vocational Aides administered the questionnaires in their respective schools. The Lab team administered the tests in the three control schools. The Vocational Aides were given a training session on the questionnaire to standardize the test procedures. While the issue of bias can be raised with regard to the use of the Aides, it should be noted that they have previously tested the student on DVEP material. Since this is a program evaluation, the obtained scored would reflect more typical classroom conditions. Therefore, the use of the Aides was considered appropriate and acceptable.

The oral instructions for the Job Information Questionnaire were quite similar to those given for the pilot instruments. However, the questionnaire was introduced as a measure of both job information and their feelings about certain jobs. Again, each item was read to the students and time allowed for completion by all the students. For both the alternation ranking and semantic differential sections, the test administrator illustrated the proper procedure for doing the items and also provided step-by-step instructions. The questionnaire typically required one class period for completion. However, extra time was allocated and if neccessary, used to insure that the students would be able to fully complete the questionnaire.

Only one administrative problem was encountered when one DVEP school principal

felt that the first two questionnaire items (Father's and Mother's Occupation) were not appropriate for a measure of job knowledge and requested these items not be completed. The students in this school were not scored on these items, although the mean score for this group was weighted so they would not be compared unfairly. All the teachers and school principals, in both experimental and control schools, were extremely cooperative and facilitated the administration of the questionnaire.

Results (Objective 1)

A multiple-factor analysis of variance model was used to determine whether experimental (DVEP) students had more general and specific knowledge relating to particular occupational clusters than did control students. Total scores on the content portion of Job Information Questionnaire represent the measure of general and specific knowledge (Maximum score value of 50). While the key variable for this evaluation was participation in the DVEP project, other factors could affect the test data. Of particular concern, was the effects of grade level (5th vs. 6th) and if sex (male vs. female). That is, would fifth graders perform differently than sixth graders?; would boys do better than girls?; would there be score differences between fifth graders in the experimental schools and those in the control schools?; etc.

Thus, three variables were incorporated into the statistical model: sex, grade level and, most important, program participation. For each of these variables or factors, there were two conditions: male vs. female, fifth vs. sixth grade and experimental vs. control school. The appropriate analysis of variance model was a 2 x 2 x 2 design (read as "two by two by two") which incorporates three factors each having two levels or conditions. In this design, the factors and their respective

conditions define the different subgroups which were tested, e.g.girl, 5th graders.

Table 3 (see below) presents the mean or average scores obtained by a random sample of sixty-eight (N=68) students in each of the different subgroups examined. This random sampling procedure was neccessary to perform the factorial analysis, i.e. it would inaccurrate to compare all the experimental school students with all the control school students since they were of unequal size.

Table 3

Mean Achievement Scores on Job Information Questionnaire for Random Samples of Students

	Experimental Schools		Control Schools	
	5th Grade	6th Grade	5th Grade	6th Grade
Sex				
Male	28.15	30.66	21.32	24.66
Female	31.13	30.18	20.03	24.99

Each mean score is based on an N=68

Given the above mean score values, the analysis of variance provided the statistical technique for testing whether the score differences are sufficiently large to indicate significant effects due to three variables examined. Table 4 presents the summary data for this analysis. The F-ratio's represent the statistics for which probability estimates were obtained. The larger the value of F, the less likely that the distribution of score differences occurred by chance. F-ratio's were obtained for each of the three factors and for the various combinations of the factors.

Three of the obtained F-ratio's are sufficiently large to indicate that they were not due to chance. Using levels of significance of .001 and .01 (one chance in a thousand and one chance in a hundred), the factors of GRADE, SCHOOL and combination of both can be considered to have meaningfully effected the obtained scores. That is, the students in the sixth grade classes obtained higher scores than fifth grade students, regardless of sex or program participation. Further, and most important, those students in experimental (DVEP) schools obtained higher scores than students in control schools, regardless of sex or grade level. Both factors combined e.g. fifth grade-control, had an additional effect on the obtained scores. Particularly, the difference between the mean scores of fifth and sixth grade students in control schools was greater than the score difference between grade levels in experimental (DVEP) schools.

Again, these data indicate that program participation increases both general and specific knowledge relating to particular job clusters. The DVEP material is successfully being absorbed by the students in the program. However, this conclusion does not uniformly apply to all the schools which participated in the DVEP project. Table 5 presents the mean scores on the Job Information Questionnaire for each of the experimental and control schools. The mean scores for the three

Table 4

Analysis of Variance for Sex, Grade, and Experimental and Control Schools

Source of Variation	Degrees of Freedom (Df)	Sum of Squares	Mean Square	F-Ratio
Sex (A)	1	19.83	19.83	.32
Grade (B)	1	825.18	825.18	13.40*
School (C)	1	7206.62	7206.62	117.00*
Sex x Grade (AxB)	1	29.19	29.19	.47
Sex x School (AxC)	1	102.38	102.38	1.66
Grade x School (BxC)	1	385.60	385.60	6.26**
Interaction (AxBxC)	1	220.06	220.06	3.57
Within Error	536	33,016.48	61.60	
Total	543	41,805.38		

* F-Ratio is significant beyond the .001 level.

** F-Ratio is significant beyond the .01 level.

Table 5

Mean Job Information Scores for Sex, Grade and School

		Mean	Standard Deviation
Sex			
Male	(N=382)	26.66	8.86
Female	(N=424)	26.65	8.76
Grade			
5th	(N=401)	25.60	9.16
6th	(N=405)	28.03	8.22
Experimental			
Wade Park	(N=47)	28.77	5.71
Roper	(N=46)	34.87	6.57
Case	(N=49)	22.12	7.91
Attucks	(N=44)	20.48	8.20
Waring	(N=47)	35.83	4.47
Martin	(N=45)	24.69	8.82
Dunham	(N=52)	23.92	7.17
Rockefeller	(N=46)	25.50	6.76
Madison	(N=61)	32.67	7.23
Stanard	(N=55)	37.06	8.24
Total	(N=492)	28.83	9.25
Control			
Sterling	(N=85)	23.72	7.35
Landis	(N=177)	22.71	6.82
Longfellow	(N=52)	24.31	5.42
Total	(N=314)	23.25	6.79

control schools are highly consistent. This indicates that the instrument is validly measuring knowledge about particular occupational clusters since individuals in these schools should be equally naive about this material. On the other hand, the mean scores for the experimental schools show a high degree of variability. The range of these mean scores extends from a low of 20.48 to a high of 37.06. The magnitude of this difference cannot be accounted for by chance testing factors or slight differences in the numbers of fifth and sixth grade students in the school samples, i.e., sixth graders score higher than fifth graders.

Several alternative explanations can be considered. The first, and most obvious, is that real differences in the learning potential of the students in the various schools exist. While superficially convenient, such an explanation is not supported when the mean Pupil Learning Rate (PLR) of the school samples are examined. While differences certainly occur, they do not correspond to the differences obtained on the achievement measure. The second possible explanation involves the idea of differential treatment in the delivery of the DVEP material. Within this idea such factors as the relative experience of the Vocational Aides, time spent with students beyond classroom presentations and degree of cooperation with the classroom teacher might contribute to the responsiveness of students to DVEP presentations. Should such a differential treatment explanation in fact be accurate, the obtained score differences should decrease over a period of time. Nonetheless, efforts to identify and eliminate the cause(s) of these differences in order to maximize the effectiveness of the program. Parenthetically, the lowest scores in the experimental schools are still quite comparable to those of the control schools.

Results (Objective 2)

The alternation ranking section of the Job Information Questionnaire provided data to compare the attitudes of the experimental and control groups toward specific

occupations. In particular, the data analysis sought to obtain information regarding differences in the students' preferences for certain jobs. However, the pilot instrument data indicated a direct experimental-control group comparison would be heavily biased by the identification of certain jobs as "male" jobs and/or "female" jobs. In order to control for this bias, comparisons were made using male and female subgroups. Thus, the preferences of experimental-males were compared to control-males and likewise, experimental-females were compared to control-females.

No effort was made to control for grade level since the pilot instrument data resulted in no real differences in the rankings of fifth and sixth graders.

For each of the jobs which were ranked, comparisons were made between the distributions of ranks given that job by the various subgroups. A simple summary statistic such as "median rank" can provide a rough description of the distribution of ranks. However, similar median ranks not necessarily reflect similar patterns of rankings. For example, two groups of 10 subjects rank a job; for one group the ranks given are 1,2,3,4 5,6,7,8,9, and 10 and for the other, the ranks are 1,1,1, 1,1,5,6,6,6,6 and 6. Obviously, the job is being perceived differently, yet the median rank for both groups is 5.5

The Mann-Whitney U Test was performed for each of the eighteen jobs comparing the rank distributions for experimental and control males and for experimental and control females. For males, the jobs of Policeman, Executive, Secretary, Lawyer, Garbage Collector and Cook, were perceived differently by the experimental and control groups. Boys in the DVEP project gave higher ranks (expressed greater preference for) to the jobs of Policeman, Executive Secretary, Garbage Collector and Cook The control school boys gave the job of Lawyer higher ranks. For females, the jobs of Doctor, Actress, Garbage Collector, Cook and Electrician received significantly different distributions of rankings. The DVEP girls gave higher ranks to the jobs of Garbage Collector and Cook, while the control girls expressed more positive

preferences for the other jobs. Those jobs with significantly different distributions are noted in Table 6. The median rank data provide rough indices for the directionality of these differences and the relative preferability of all the jobs within each comparison group.

These data seem to suggest that both males and females in the experimental groups find certain low prestige jobs, particularly Garbage Collector and Cook, more acceptable than males and females in the control groups. While these jobs are still perceived as having less desirability than the other jobs, more individuals do express a greater willingness to rank these jobs higher. The control groups, on the other hand, show a consistently higher preference for high prestige jobs such as Lawyer, Doctor and Actress (the distribution comparison for Actor in the male groups showed the same tendency but was not quite significant) It may well be that the DVEP presentations result in more realistic decisions in job preferences. That is, these students show a greater willingness to prefer jobs with negative stereotypes and to prefer to a lesser degree jobs with positive images. Realistically, Garbage Collectors earn excellent money. On the other hand, these data can also be interpreted from the view that the DVEP project lowers the aspiration levels of the participating students. However, neither interpretation can be fully substantiated by these data.

The second attitude measure in the Job Information Questionnaire was the semantic differential. This format was designed to examine the feelings certain concepts elicit for the experimental and control groups. A sum score for eight bipolar adjective pairs represents the evaluative connotation for each concept. Again, a 2 x 2 x 2 analysis of variance design was employed to compare score differences (the rationale for this design has been previously discussed; also refer to Table 4) for each concept.

Table 6

Median Ranks and Mann-Whitney U Test Results for Experimental and Control Groups Identified by Sex

	Experimental Male	Control Male	Experimental Female	Control Female
Doctor	4.70	3.77	9.07	7.64 **
Actress Actor	6.50	4.90	4.45	3.05 **
Nurse	11.70	12.18	2.63	3.00
Mechanic (Car)	3.42	4.58	13.16	13.50
Teacher	6.23	6.58	2.99	3.23
Policeman	4.83	6.55 *	11.49	11.85
Exec. Sec.	10.58	12.54 **	7.23	6.48
Waiter/Waitress	11.42	11.89	9.33	9.26
Model	12.29	12.18	3.98	3.58
Lawyer	5.80	4.46 **	11.34	10.66
Reporter	6.48	6.81	10.69	10.69
Beautician	12.80	12.17	6.00	6.72
Garbage Collector	15.21	17.10 **	15.91	17.40 *
Cook	8.68	10.88 **	5.88	7.57 *
Disc. Jockey	7.70	8.55	13.17	12.55
Stewardess	13.34	12.50	6.19	6.47
Electrician	7.53	6.70	14.04	12.91 *
Airplane Pilot	6.48	6.55	13.81	13.58

* Mann-Whitney U is significant beyond .01

** Mann-Whitney U is significant beyond .05

The results obtained for each concept were:

(1) GETTING A JOB- No significant score differences were found for the main factors of sex, grade level and program participation. A significant F-ration (probability level beyond .01) was obtained for the interaction of grade level and program participation. Sixth grade students in the experimental schools had more positive attitudes toward the concept than fifth grade students, while fifth grade students in the control schools showed more positive attitude than sixth grade students.

(2) REPORTER- Significant score differences (F-ratio significant beyond .01 level) were found for the factor of program participation. Students in the experimental schools viewed this concept more favorably than control school students.

(3) CAREER- No significant score differences were obtained.

(4) MAIL CARRIER- Significant score difference (F-ratio significant beyond .01 level) were found for the factor of program participation. Students in the experimental schools viewed this concept more favorably than control school students.

(5) PLAY- No significant score differences were obtained.

(6) UNEMPLOYMENT- No significant score differences were obtained.

(7) TELEPHONE INSTALLER- No significant score differences were obtained.

(8) EDUCATION- Significant score differences (F-ratio significant beyond .05 level) were found for the factor of sex. Girls showed more positive attitudes toward this concept than boys.

These data indicate that positive attitudes toward two world of work concepts were significantly increased by participation in the DVEP project. Both concepts, REPORTER and MAIL CARRIER, are jobs which were identified, described and discussed in the DVEP presentations for all the participating schools It, therefore, is

possible to assume that the students' increased knowledge and awareness of these jobs resulted in significantly more positive attitudes toward these jobs. Whether these more favorable attitudes can generalize to more global world of work concepts over a longer period of time must be examined by future research efforts.

OVERALL PROGRAM EVALUATION

The primary goal of the DVEP evaluation was to assess the effectiveness of the program in meeting two project objectives. The first objective was based on the outcome objective originally defined for the upper elementary school level: the program would result in greater knowledge of occupations within an array of occupational clusters. Since the second originally defined objective could not be meaningfully evaluated due to constraints placed on the DVEP project, an alternative outcome objective was identified. This revised objective was that the program would result in more positive attitudes toward specific jobs and the world of work.

Using a post-test (test given after the program intervention), "matched" control group research design, the empirical evaluation was performed. The results indicate that the DVEP project does significantly yield more occupational knowledge and, less conclusively, does effect attitudes positively. The program therefore can be considered to be fulfilling its objectives.

There are, however, several qualifications to this assessment. First, the impact of the DVEP presentations is not uniform for all the participating schools. There was a substantial difference in the achievement measure performance across the project schools. The identification and elimination of the cause(s) of these discrepancies would further maximize program effectiveness. Second, no significant differences were obtained in the attitudes of the students in the program toward global world of work concepts when compared to the attitudes of control

students. However, the relatively short period of time that the program has been operational may account for these results. Since differences in the attitudes toward job specific concepts were obtained, the program did, in part, fulfill this objective.

A secondary goal of the DVEP evaluation was to examine the organizational processes required for program delivery. Based on discussions with the DVEP staff, on-site observations and interviews with participating school principals and teachers, several problem areas in the program delivery were identified. During the initial period of program implementation, both the vocational Aides and the classroom teachers were unclear about the role the Aides in the classroom beyond the actual presentation of DVEP material. Given the program goal of career upgrading for the individuals who are Aides, it would seem that the Aides should be seen in the role of "student teachers." The acceptance of such a role definition on the part of the classroom teachers depends, in large measure on the skill development of the Aides. This relates to another issue raised in the discussions - that of increased in-service training. While the Aides do take education courses as part of the program, they were required to make classroom presentations almost immediately at the beginning of the program. A somewhat longer period of classroom observation would do much to meet the criticism of lack of training.

The second major difficulty identified in the delivery of the DVEP material involved the relationship between the career development material and the Social Studies curriculum. For much of the implementation period, the direct injection of the program material into Social Studies units was not realized. This can be explained by the differential rates at which the respective contents were presented. Since DVEP material can only be given one class period a week, the Social Studies unit to which it was originally related no longer was current. It simply may be necessary to use the Social Studies period to present vocational

education material but not to justify these presentations with the content of the Social Studies curriculum. In general, the delivery of the DVEP material was effective in that both the Aides and teachers thought the program meaningfully impacted on the students.

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APPENDIX

JOB INFORMATION QUESTIONNAIRE

NAME:_____ SEX: _____

SCHOOL:_____ GRADE: _____

1. FATHER'S OCCUPATION_____

2. MOTHER'S OCCUPATION_____

3. WHAT ARE THE NAMES OF THE NEWSPAPERS IN CLEVELAND?_____

_____

4. WHAT ARE THE TELEVISION STATIONS ON WHICH YOU CAN WATCH T.V. SHOWS?

_____

5. NAME THE LARGEST AIRPORT IN CLEVELAND?_____

_____

6. NAME THREE AIRLINES THAT FLY TO AND FROM CLEVELAND? _____

_____

7. WHAT KIND OF CARD WOULD YOU NEED BEFORE YOU CAN GET A JOB?

_____

8. HERE ARE SOME THINGS YOU NEED TO DO IF YOU WANT TO FIND AND GET A JOB. SHOW THE ORDER THAT YOU WOULD DO THESE THINGS BY PUTTING A 1 NEXT TO THE FIRST STEP, A 2 NEXT TO THE SECOND STEP, ETC.

_____GO TO AN EMPLOYMENT SERVICE

_____DECIDE WHAT KIND OF JOB YOU ARE ABLE TO GET

_____READ THE HELP WANTED ADS

_____GO FOR AN INTERVIEW

_____TELEPHONE THE EMPLOYER

9. UNDERLINE THE PLACE WHERE EACH OF THESE JOBS WOULD MOST LIKELY BE FOUND.
FOR EXAMPLE: A REPORTER WORKS AT A NEWSPAPER.

REPORTER	NEWSPAPER	POST OFFICE	TV & RADIO	TELEPHONE
SPECIAL DELIVERY MESSENGER	NEWSPAPER	POST OFFICE	TV & RADIO	TELEPHONE
COPY EDITOR	NEWSPAPER	POST OFFICE	TV & RADIO	TELEPHONE
INSTALLER	NEWSPAPER	POST OFFICE	TV & RADIO	TELEPHONE
LINEMAN	NEWSPAPER	POST OFFICE	TV & RADIO	TELEPHONE
TRAFFIC MANAGER	NEWSPAPER	POST OFFICE	TV & RADIO	TELEPHONE
NEWS DIRECTOR	NEWSPAPER	POST OFFICE	TV & RADIO	TELEPHONE
SERVICE REPRESENTATIVE	NEWSPAPER	POST OFFICE	TV & RADIO	TELEPHONE
PARCEL POST CARRIER	NEWSPAPER	POST OFFICE	TV & RADIO	TELEPHONE
ENGRAVER	NEWSPAPER	POST OFFICE	TV & RADIO	TELEPHONE
PRESSMAN	NEWSPAPER	POST OFFICE	TV & RADIO	TELEPHONE
MAKE-UP ARTIST	NEWSPAPER	POST OFFICE	TV & RADIO	TELEPHONE
CHIEF ENGINEER	NEWSPAPER	POST OFFICE	TV & RADIO	TELEPHONE
BROADCAST TECHNICIAN	NEWSPAPER	POST OFFICE	TV & RADIO	TELEPHONE
SALES REPRESENTATIVE	NEWSPAPER	POST OFFICE	TV & RADIO	TELEPHONE
DIRECTORY CLERK	NEWSPAPER	POST OFFICE	TV & RADIO	TELEPHONE
DISTRIBUTION CLERK	NEWSPAPER	POST OFFICE	TV & RADIO	TELEPHONE
FOREIGN CORRESPONDENT	NEWSPAPER	POST OFFICE	TV & RADIO	TELEPHONE
WINDOW CLERK	NEWSPAPER	POST OFFICE	TV & RADIO	TELEPHONE

10. WHO TAKES YOUR MONEY WHEN YOU WANT TO FLY ON AN AIRPLANE: ?

_____A. RESERVATION AGENT

_____B. TICKET SALES AGENT

_____C. AIR TRAFFIC CONTROLLER

_____D. AIRLINE DISPATCHER

11. WHO TRIES TO MAKE YOU FEEL COMFORTABLE ON BOARD AN AIRPLANE?

____A. FLIGHT OFFICER
____B. CO-PILOT
____C. STEWARDESS
____D. AIRLINE DISPATCHER

12. WHO LOADS AND UNLOADS THE BAGGAGE ON AN AIRPLANE?

____A. FLIGHT OFFICER
____B. RESERVATION AGENT
____C. AIRLINE DISPATCHER
____D. RAMP SERVICEMAN

13. WHO HELPS THE PILOT AVOID HITTING OTHER FLYING AIRPLANES BY GIVING HIM INFORMATION OVER HIS RADIO?

____A. AIR TRAFFIC CONTROLLER
____B. CO-PILOT
____C. FLIGHT ENGINEER
____D. AIRLINE DISPATCHER

14. WRITE THE NAMES OF DIFFERENT JOBS IN A HOSPITAL. FOR EXAMPLE: A DOCTOR WORKS IN A HOSPITAL.

_____ _____
_____ _____
_____ _____

15. WHICH JOB DOES NOT BELONG WITH THE OTHERS?

____A. TELEPHONE OPERATOR
____B. PROGRAM DIRECTOR
____C. SERVICE REPRESENTATIVE
____D. INSTALLER

____A. FLIGHT ENGINEER
____B. RAMP SERVICEMAN
____C. CHIEF ENGINEER
____D. PILOT

____A. PRODUCER
____B. EDITOR
____C. REPORTER
____D. PUBLISHER

16. THIS IS A LIST OF ~~TWENTY~~ EIGHTEEN JOBS ON WHICH MEN AND WOMEN WORK FOR A LIVING. READ THROUGH THE LIST TO MAKE SURE YOU KNOW ALL THE JOBS AND THINK ABOUT HOW MUCH YOU WOULD LIKE TO WORK ON EACH OF THESE JOBS. NOW, DECIDE ON ONE JOB THAT YOU WOULD REALLY LIKE TO HAVE MORE THAN ANY OTHER. WRITE THE NAME OF THAT JOB IN THE SPACE NEXT TO "1 - BEST JOB." NOW, DECIDE WHICH JOB YOU WOULD REALLY NOT LIKE TO HAVE. DO NOT WORY ABOUT THE REASON YOU DON'T WANT THE JOB. WRITE THE NAME OF THIS JOB IN THE SPACE NEXT TO "1 - WORST JOB." CONTINUE TO ALTERNATELY CHOOSE BETWEEN THE "NEXT WORST" JOBS UNTIL YOU YOU HAVE WRITTEN THE NAMES OF ALL THE JOBS IN THE SPACES. AS YOU SELECT EACH JOB, DRAW A LINE THROUGH IT SO YOU DON'T CHOOSE IT TWICE.

DOCTOR
ACTRESS/ACTOR
NURSE
MECHANIC (CAR)
TEACHER
POLICEMAN
EXECUTIVE SECRETARY
WAITER/WAITRESS
MODEL
LAWYER
REPORTER
BEAUTICIAN
GARBAGE COLLECTOR
COOK
DISC JOCKEY
STEWARDESS
ELECTRICIAN
AIRPLANE PILOT

1. "BEST JOB" - _____
2. "NEXT BEST JOB" - _____
3. "NEXT BEST JOB" - _____
4. "NEXT BEST JOB" - _____
5. "NEXT BEST JOB" - _____
6. "NEXT BEST JOB" - _____
7. "NEXT BEST JOB" - _____
8. "NEXT BEST JOB" - _____
9. "NEXT BEST JOB" - _____

9. "NEXT WORST JOB" - _____
8. "NEXT WORST JOB" - _____
7. "NEXT WORST JOB" - _____
6. "NEXT WORST JOB" - _____
5. "NEXT WORST JOB" - _____
4. "NEXT WORST JOB" - _____
3. "NEXT WORST JOB" - _____
2. "NEXT WORST JOB" - _____
1. "WORST JOB" - _____

Getting a Job						
Good	___;	___;	___;	___;	___;	Bad
Weak	___;	___;	___;	___;	___;	Strong
Sad	___;	___;	___;	___;	___;	Happy
Wise	___;	___;	___;	___;	___;	Foolish
Brave	___;	___;	___;	___;	___;	Cowardly
Dirty	___;	___;	___;	___;	___;	Clean
Kind	___;	___;	___;	___;	___;	Cruel
Important	___;	___;	___;	___;	___;	Unimportant

Newspaper Reporter						
Good	___;	___;	___;	___;	___;	Bad
Weak	___;	___;	___;	___;	___;	Strong
Sad	___;	___;	___;	___;	___;	Happy
Wise	___;	___;	___;	___;	___;	Foolish
Brave	___;	___;	___;	___;	___;	Cowardly
Dirty	___;	___;	___;	___;	___;	Clean
Kind	___;	___;	___;	___;	___;	Cruel
Important	___;	___;	___;	___;	___;	Unimportant

Career						
Good	___;	___;	___;	___;	___;	Bad
Weak	___;	___;	___;	___;	___;	Strong
Sad	___;	___;	___;	___;	___;	Happy
Wise	___;	___;	___;	___;	___;	Foolish
Brave	___;	___;	___;	___;	___;	Cowardly
Dirty	___;	___;	___;	___;	___;	Clean
Kind	___;	___;	___;	___;	___;	Cruel
Important	___;	___;	___;	___;	___;	Unimportant

Mail Carrier						
Good	___;	___;	___;	___;	___;	Bad
Weak	___;	___;	___;	___;	___;	Strong
Sad	___;	___;	___;	___;	___;	Happy
Wise	___;	___;	___;	___;	___;	Foolish
Brave	___;	___;	___;	___;	___;	Cowardly
Dirty	___;	___;	___;	___;	___;	Clean
Kind	___;	___;	___;	___;	___;	Cruel
Important	___;	___;	___;	___;	___;	Unimportant

PLAY		UNEMPLOYMENT	
GOOD	BAD	GOOD	BAD
WEAK	STRONG	WEAK	STRONG
SAD	HAPPY	SAD	HAPPY
WISE	FOOLISH	WISE	FOOLISH
BRAVE	COWARDLY	BRAVE	COWARDLY
DIRTY	CLEAN	DIRTY	CLEAN
KIND	CRUEL	KIND	CRUEL
IMPORTANT	UNIMPORTANT	IMPORTANT	UNIMPORTANT

TELEPHONE INSTALLER		EDUCATION	
GOOD	BAD	GOOD	BAD
WEAK	STRONG	WEAK	STRONG
SAD	HAPPY	SAD	HAPPY
WISE	FOOLISH	WISE	FOOLISH
BRAVE	COWARDLY	BRAVE	COWARDLY
DIRTY	CLEAN	DIRTY	CLEAN
KIND	CRUEL	KIND	CRUEL
IMPORTANT	UNIMPORTANT	IMPORTANT	UNIMPORTANT